

10/561229**APPENDIX****IAP9 Rec'd PCT/PTO 19 DEC 2009****CLEAN VERSION OF AMENDED/NEW CLAIMS**

1. *(currently amended)*: A process for thermal sterilization of ventilated air of a site that requires low levels of microorganism contamination, wherein the air to be sterilized is moved, by forced circulation, in a cycling operation with alternative flow cycles in opposite directions by use of an air circulator and feed valves that can reverse the direction of the air flow,
across a thermal sterilization chamber that comprises an inlet, an outlet, an electrical resistor and a first and a second stack of metallic grilles or screens , wherein the resistor is positioned between the two stacks and disposed perpendicularly to the grilles or screens.
2. *(currently amended)*: A process according to claim 1, wherein dissipation of kinetic energy of the air flow is achieved by transit through plenums located at the inlet and the outlet of the chamber.
3. *(currently amended)*: A process according to claim 1, wherein the frequency of inversion of the direction of air flow is greater than one inversion per minute.
4. *(currently amended)*: A process according to claim 1 wherein a cycle comprises two partial cycles, and air that is untreated at the end of each partial cycle is recycled to the air circulator inlet.
5. *(currently amended)*: A process according to claim 4 wherein, during the first partial cycle, the air circulator displaces inflowing ambient air:
 - (a) through one of the feed valves,
 - (b) across said plenum,
 - (c) across the first stack of metallic grilles,
 - (d) into a heating zone,
 - (e) across the second stack of metallic grilles,
 - (f) across the second plenum,
 - (g) through the other feed valve,
 - (h) to the site to be ventilated or across a purge valve, andwherein the feed valves are inverted at the end of said first partial cycle to initiate the second partial cycle during which the air flows in the opposite direction .

APPENDIX (cont.)

6. *(currently amended)*: An apparatus for thermal sterilization of air ventilating a site that requires a low level of microorganism contamination, which apparatus creates an air circuit, the apparatus comprising

- (a) a thermal sterilization chamber which comprises:
 - (i) an air inlet and outlet
 - (ii) two stacks of metallic grilles or screens; and
 - (iii) an electrical resistor that is disposed between said two stacks. and
- (b) means for generating an air flow and forcing and regulating circulation of the air across the chamber, which means comprise
 - (i) a centrifugal air circulator;
 - (ii) feed valves ; and
 - (iii) a cyclic programming system for two partial or half cycles,

which means permit directing the air flow in either of two directions to one or the other side of the chamber in a path that is perpendicular to the stacking of the metallic grilles.

7. *(currently amended)*: An apparatus according to claim 6, wherein the air circuit comprises two plenums located on the inlet and outlet sides of the sterilization chamber.

8. *(currently amended)*: An apparatus according to claim 7, wherein the plenums have a volume greater than or equal to the volume of the stacks .

9. *(currently amended)*: An apparatus according to claim 7, wherein, the face of the stacks located between the stack and the plenum is equipped with a perforated plate having multiple apertures of different diameters.

10. *(currently amended)* : An apparatus according to claim 6 wherein the metallic grilles are made of continuous wires having a diameter between 0.1 mm and 1 mm.

11. *(currently amended)* : An apparatus according to claim 6 wherein the metallic grilles or screens are metallic screens made of expanded metal.

12. *(currently amended)* : An apparatus according to claim 6 wherein the metallic grilles or screens have a volumetric porosity that is between 75% and 95%.

APPENDIX (cont.)

13. *(currently amended)* : An apparatus according to claim 6 wherein the metallic grilles or screens are made of a metal characterized by high thermal conductivity selected from the group consisting of aluminum, copper, and galvanized steel.
14. *(currently amended)* : An apparatus according to claim 6 wherein each stack has a high thermal conductivity in a cross-section perpendicular to the direction of air flow and negligible thermal conductivity in the direction of the air flow.
15. *(currently amended)* : An apparatus according to claim 6 wherein the electrical resistor has a large heat exchange surface in any part of the cross-section of the chamber.
16. *(currently amended)* : An apparatus according to claim 6 that comprises purge valves that allow recycling of untreated air to the air circulator inlet.
17. *(currently amended)* : An apparatus according to claim 6, wherein the cross-section of the sterilization chamber is square or rectangular and the valves comprise flaps having a length identical to the length of the longest side of the cross-section.
18. (new) A process according to claim 4 wherein the partial cycles are half cycles of equal duration.
19. (new) A process according to claim 18 wherein, after the first half cycle, the direction of flow through the feed valves is inverted so that during the full duration of the second half cycle, the air flows in a direction that is opposite to the direction in the first half cycle.
20. (new) An apparatus according to claim 6 wherein the feed valves are solenoid-operated valves.